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(54) IMPROVEMENTS IN OR RELATING TO PRESSURE RESPONSIVE INDICATING DEVICES

(71) We, KURODA SEIKO CO., LTD. a Japanese Company, of 26-11, Kitasenzoku 2-chome, Ota-ku, Tokyo, Japan, do hereby declare the invention, for which we pray that a patent may be granted to us, and the method by which it is to be performed, to be particularly described in and by the following statement:—

The present invention relates to pressure responsive indicating devices and is more particularly concerned with indicating devices for indicating the presence or absence of fluid under pressure more especially air.

In the past the presence of pneumatic pressure has been detected by employing a spring loaded piston which is visible through a magnifying lens, but this method has one distinct disadvantage that the presence or absence of pneumatic pressure can only be detected by an operator viewing the indicator from the front and it is extremely difficult if not impossible to obtain a satisfactory indication when viewing the indicating device from one side. It is therefore an object of the present invention to provide an indicating device which can be viewed not only from the front but also from the sides.

According to the present invention an indicating device for indicating the presence or absence of fluid under pressure includes a cap having a transparent protrusion, and a slitted membrane beneath or behind said cap and in the path of movement of a spring-loaded piston responsive to fluid under pressure whereby in the absence of fluid under pressure the membrane extends across beneath or behind the cap, and when fluid under pressure is applied to the piston the piston moves through the membrane and becomes visible within the transparent protrusion.

The invention will be further described by way of example with reference to the accompanying drawings in which:—

Figure 1 is a sectional view of one embodiment of the invention, and

Figures 2(I) to 2(VI) are plan views of six different forms of membrane which can be used in a device embodying the present invention.

An indicating device embodying the present invention comprises a cylindrical body member 10 having near one end a flange 11 and an adjacent screw threaded portion 12 to receive a fixing nut or ring 13 whereby the device can be fixed to a support member such as a panel with front end 14 protruding beyond one surface thereof. The front end is closed by a cap having a transparent protrusion 5 retained by a screw threaded ring 15. The rear end of the cylindrical body 10 receives a screw threaded closure member 16 having an internally projecting central boss 17 having a central bore 18 to enable a pipe (not shown) received in a suitable gland 19 to communicate with the inside of the cylindrical body 10 and the under side of a piston 4 slidably mounted within the cylindrical body 10. A spring 20 acts on the piston 4 and on a flanged insert 21 fixed in the body 10. Stretching across one end of the insert 21 and intercepting the path of the piston 4 is a fixed slitted membrane 3. The relative positions of the piston 4, membrane 3 and body 10 illustrated in Figure 1 are those corresponding to the application of fluid under pressure to the piston 4. In the absence of applied fluid pressure the piston 4 is urged towards the closure 16 by the spring 20 and the piston withdraws through the membrane 3 which there upon extends across the flanged end of the insert 21. It will be noted from Figure 1 that when fluid under pressure is applied to the piston 4 the piston protrudes into the transparent protrusion 5 and is visible not only from the front but also from the sides of the device.

The slitted membrane 3 may be circular or rectangular in shape and may be made of

a resilient metal or of a resilient plastics material. The slitted membrance may be provided only with cuts 2 as indicated in Figures 2(I) and (IV), or may be provided with cuts 2 and holes 1 as illustrated in Figures 2(II), (V), and (VI), or may be provided with cuts 2 and arcuate slots 6 as illustrated in Figure 2(III).

WHAT WE CLAIM IS:—

1. An indicating device for indicating the presence or absence of fluid under pressure including a cap having a transparent protrusion, and a slitted membrane beneath or behind said cap and in the path of movement of a spring loaded piston responsive to fluid under pressure, whereby in the absence of fluid under pressure the membrane extends across beneath or behind the cap, and when fluid under pressure is applied to the piston the piston moves through the membrane and becomes visible within the transparent protrusion.

2. An indicating device as claimed in claim 1 in which the membrane is circular.

3. An indicating device as claimed in claim 1 in which the membrane is rectangular.

4. An indicating device as claimed in claim 1, 2 or 3 in which the membrane is thin and metallic.

5. An indicating device as claimed in claim 1, 2 or 3 in which the membrane is made of a plastics material.

6. An indicating device as claimed in any of claims 1 to 5 in which the slitted membrane is provided with cuts only.

7. An indicating device as claimed in any of claims 1 to 5 in which the slitted membrane is provided with cuts and with holes at the ends of at least some of the cuts.

8. An indicating device as claimed in any of claims 1 to 5, in which the slitted membrane is provided with cuts and with arcuate slots at the ends of at least some of the cuts.

9. An indicating device for indicating the presence or absence of fluid under pressure constructed and arranged and adapted to be operated substantially as hereinbefore particularly described with reference to and as illustrated in the accompanying drawings.

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1317659 COMPLETE SPECIFICATION
1 SHEET This drawing is a reproduction of the Original on a reduced scale

Fig. 1.

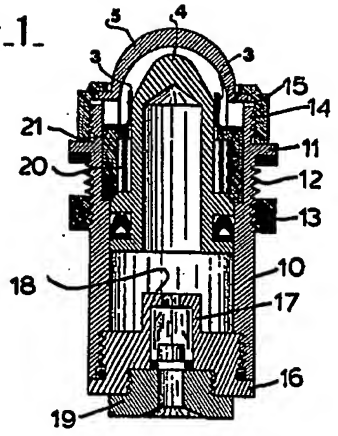

Fig. 2.